

# The Proper Place for Dental Waste

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A curriculum for use in Kansas dental  
schools

*Presented by Nancy J. Larson, Kansas State University Pollution  
Prevention Institute*

*for the*

*Binational Toxics Strategy Mercury Workgroup*

# KSU Pollution Prevention Institute

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- Technical assistance provider for Kansas (SBEAP)
- Campus and Wichita offices
- Confidential, nonregulatory, free assistance
- Multimedia compliance assistance and P2
- Site assessments
- Publications
- Workshops

# Kansas Dental Waste Education Efforts - Overview

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- History of work with mercury wastes
- Wichita, KS POTW/PPI pilot effort
  - Testing
  - CMP program for mercury and silver
  - Phase I and II of Wichita POTW dental program
- Curriculum
  - Part of a 2001 statewide effort – workshops
  - Lessons learned
- Mercury education effort continues

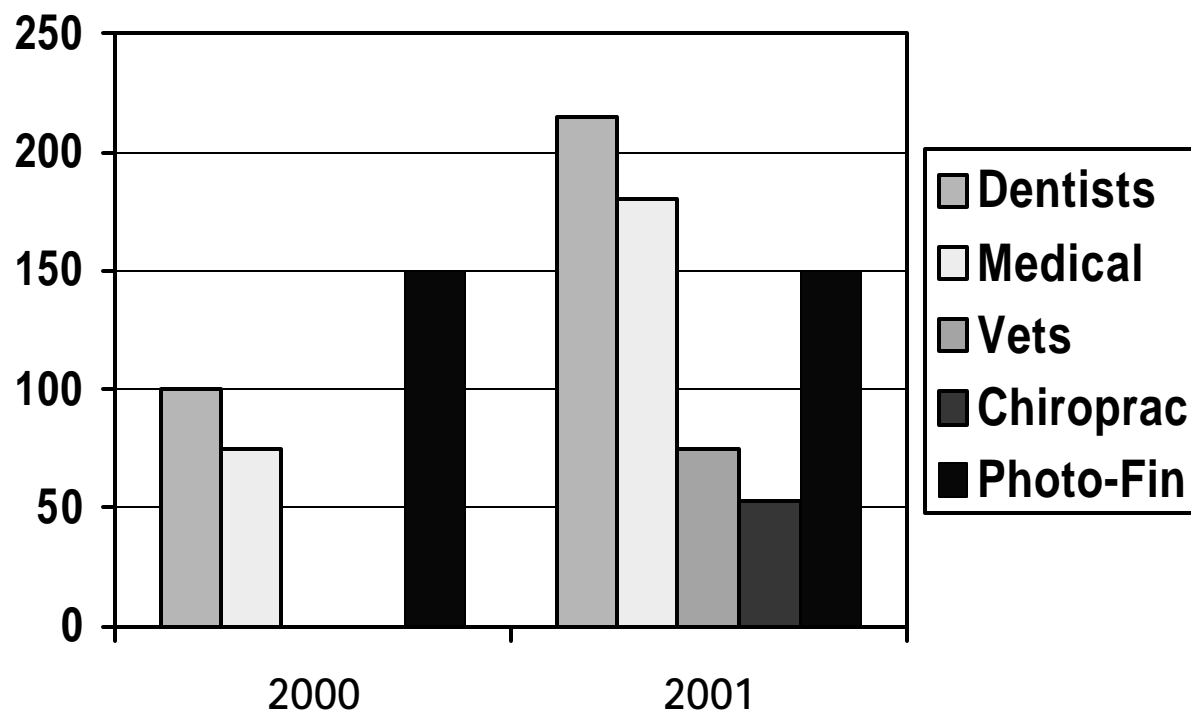
# History of Work with Mercury Wastes

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- Wichita 1997/98
  - Mercury levels at POTW
  - Not SIUs
  - Non-scientific testing revealed 70% of mercury entering plant from 220 dental clinics
- First educational effort a “laugh”
- 2000 CMP program for mercury and silver
  - Three workshops
  - Traditional silver CMP – all generators
  - Chairside trap maintenance mercury program for dental community

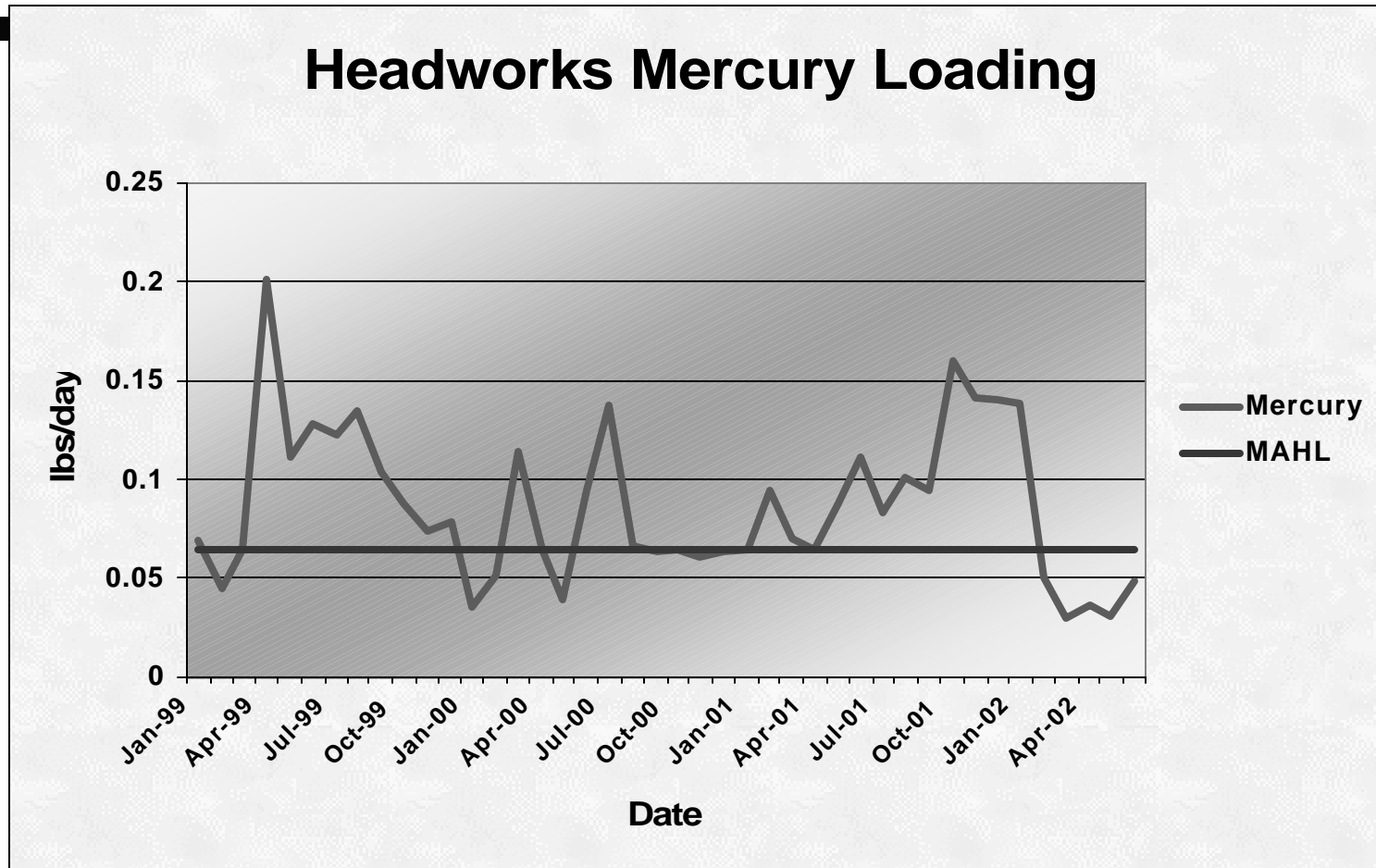
# Wichita's Program Today *(regulatory)*

**Number of Participants**

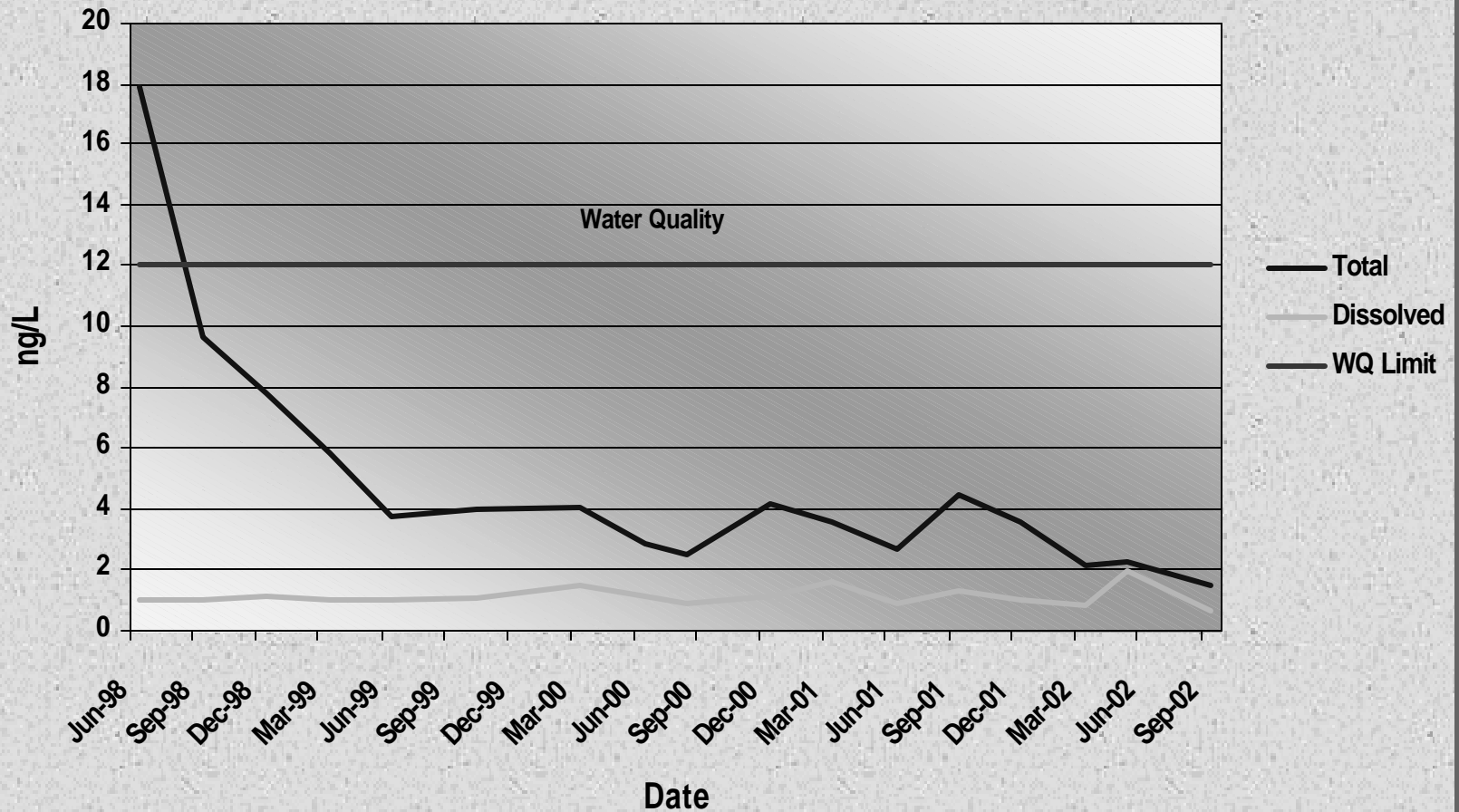


- As of 10/02, dental clinics must install an "improved technology" for increased mercury-amalgam removal.

# Wichita's Program Success

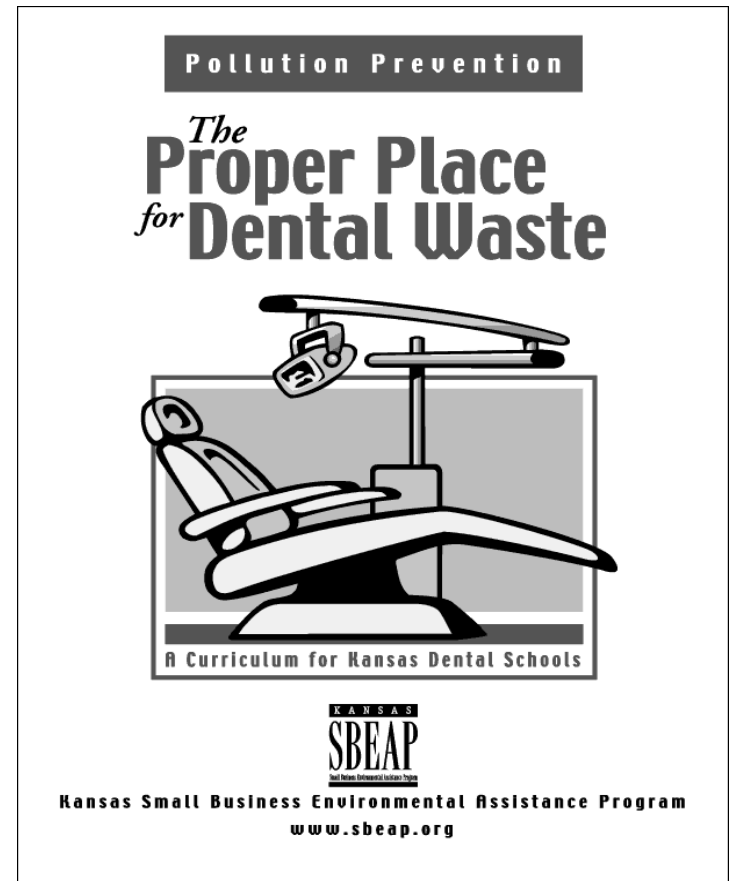


## Final Effluent Mercury Levels



# Dental Curriculum

- “The Proper Place for Dental Waste”
  - Fall 2001
  - PPIS grant
- Statewide effort
  - Eight CMP workshops around Kansas
  - Curriculum to six Kansas dental schools





# Curriculum Format

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- Used “Conceptual Change Model for Teaching” the five “E’s”:
  - Engage
  - Explore
  - Explain
  - Elaborate or Extend
  - Evaluate
- Reviewed by multiple dental, environmental, and curriculum professionals

# Curriculum Format

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## Two Parts

- Part I
  - Mercury-amalgam
- Part II
  - Silver and others
- Each part ~45min
- Intended for instructor delivery

## Each part includes:

- Instructor script
- Guided student note-taking sheets
- Handouts
- Overheads
- Floppy disk with PowerPoint

# Part I Mercury Focus

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- Why mercury is a problem from a health and environmental standpoint ~ dinner plate
- All source across U.S. and Kansas
- Why dental amalgam is a problem
- BMP's and CMP's
- Regulations and regulated regions of state
- Resources
  - Local and national ADA
  - SBEAP

# Mercury Health Concerns

## *"Mad Hatter Syndrome"*

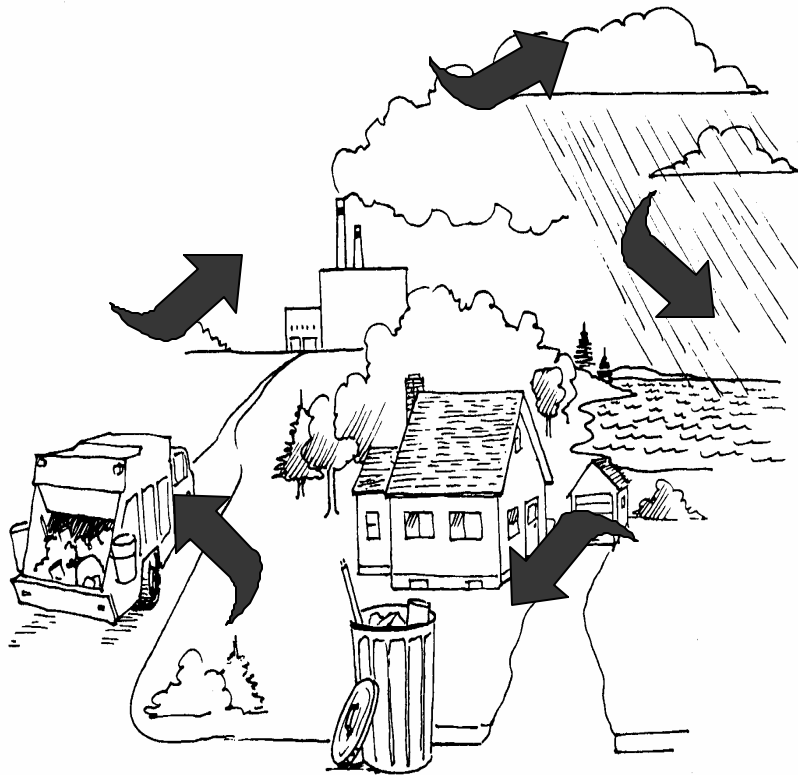
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- Known neurotoxin
- Slows fetal and child development
- Causes irreversible brain damage
- Harms ability to walk, talk, see, and hear



# Mercury Circulation in the Environment

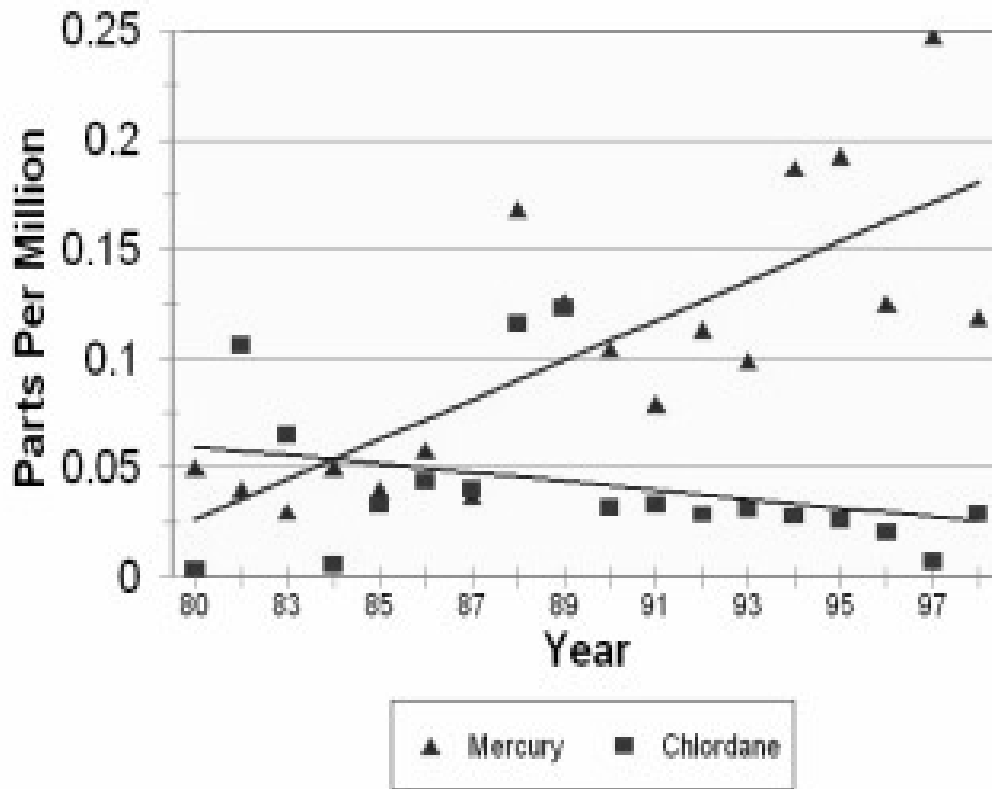
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- Emitted to the air
- Emitted directly to the water or soil
- Travels long distances, then precipitates out with rainfall, entering lakes and streams
- Not “treatable;” must be prevented

# Mercury Trends in Kansas

Figure 2. Kansas Fish Fillet Trends



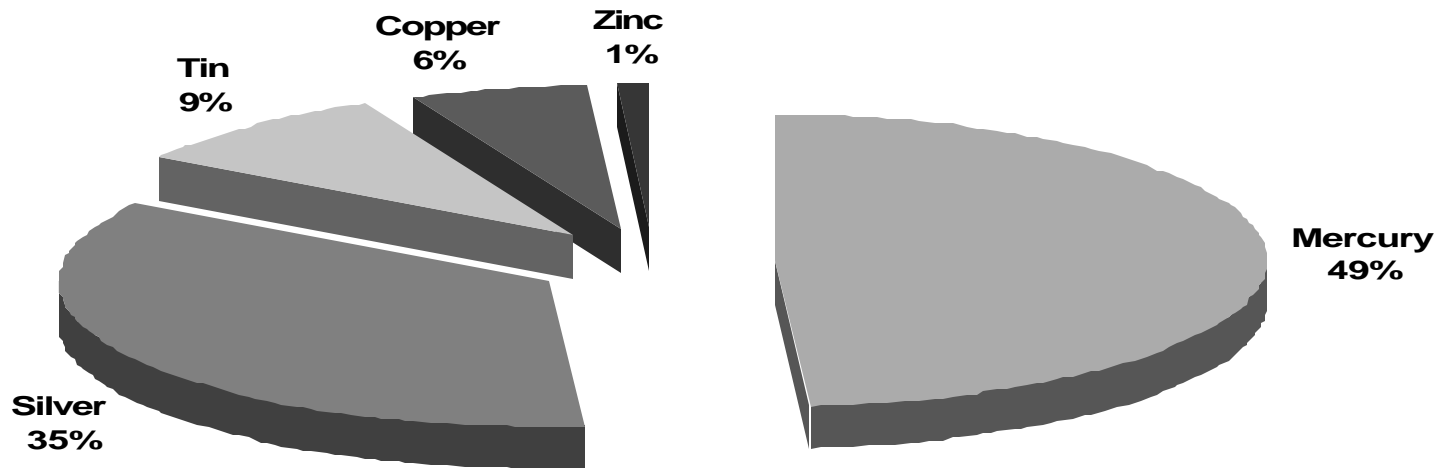
- “Nationwide and at all long-term, fish-tissue monitoring sites in Kansas, mercury appears to be on the increase.”

*Kansas Environment  
2000 report*

# Why Is Dental Amalgam a Problem?

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## Composition of a Common Dental Amalgam



# Part II

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- Silver-rich wastes
  - Recovery options
- Medical service wastes
- Lead foils, shields, and aprons
- Some cleaners
- Environmental regulations
  - CMPs waste water
  - RCRA





# Lessons Learned - Curriculum

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- Five “E’s” great learning tool
- Curriculum full of graphics thanks to sharing of resources
- Trains professionals before they enter the field
- Would like to put script in better format for instructors
- Change in regulations can date material
- Research professional accreditation
- Plan for evaluation and updates (funding??)

# Lessons Learned Education Effort - *Partnering for Success*

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- POTWs and SBEAPs natural partners
  - Good guy-bad guy?
  - Lead from radiator shops
  - Silver and mercury
- Wichita POTW purchased central Ag recovery unit
  - 80% of dentists committed to using it
  - 4-5 month payback for POTW
- Dental association behind mercury and silver CMP, encouraging from their association level
  - From a “joke” to committed partners for the environment

# Mercury Education Effort Continues

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- 2002 focus
  - Publish amalgam waste factsheet
  - Present curriculum at dental schools and for dental associations
  - Provide a series of articles to local and state dental newsletters
  - Site assessments
- 2003 focus
  - Bring H2E to Kansas
    - Encourage H2E partners
    - Site assessments
    - Case studies
    - Industry taskforce - KAHE
    - Workshop 4/9/03
  - Region 7 Mercury Taskforce

# Questions?

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